

**BEFORE THE PUBLIC UTILITIES COMMISSION  
OF THE STATE OF CALIFORNIA**



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Order Instituting Rulemaking to Continue  
Implementation and Administration of  
California Renewable Portfolio Standard  
Program.

Rulemaking 11-05-005  
Filed May 5, 2011

**COMMENTS OF ORMAT TECHNOLOGIES, INC. IN RESPONSE TO  
ADMINISTRATIVE LAW JUDGE'S RULING REQUESTING COMMENTS ON THE  
RENEWABLE AUCTION MECHANISM**

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January 30, 2014

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RENEWABLE AUCTION MECHANISM**

Pursuant to the Administrative Law Judge's Ruling in this proceeding dated December 31, 2013, Ormat Technologies, Inc. ("Ormat") provides the following comments regarding the Renewable Auction Mechanism ("RAM"). For brevity, we have not retyped the questions but have used the ruling's numbering scheme for reference.

With over four decades of experience, Ormat Technologies, Inc. is a leading geothermal company and the only vertically integrated company solely engaged in geothermal and recovered energy generation. Ormat's current generation portfolio totals 611 MW (net), of which about 200 MW (net) is in California, and the rest in Nevada, Hawaii, Guatemala and Kenya. Ormat is also a proud participant in the Renewable Auction Mechanism program, with two geothermal power plants successfully delivering renewable energy to PG&E through that program: the 14-MW Mammoth G3 power plant – contracted in RAM 1 – and the 7.5-MW Mammoth G1 power plant – contracted in RAM 2.

**Summary of Comments**

Ormat supports the continuation of the RAM program, but believes that revisions to the program are necessary to level the playing field so that base-load resources, that do not

require costly integration services that are required for the variable resources that predominate under the current RAM structure. Ormat also recommends that the Commission expand eligibility for RAM to larger sized base-load resources and to resources located outside California IOU service area boundaries.

**1) REAUTHORIZATION OF RAM:**

a)

- i) Yes, the RAM is very much still needed. While the Energy Division observes at page 5 of “Energy Division Summary & Questions on Future of RAM that the response to RAM auctions has been robust,” Ormat sees this as a matter of interpretation. As we will suggest in answering the ALJ’s questions, we think the response to RAM could be usefully and appropriately made more robust if certain modifications were adopted. Specifically, we look at Figure 2 in the Energy Division’s summary and we agree it displays a very low response from base-load technologies. But we disagree with the Energy Division about its cause. Our experience is that base-load technology participation is effectively precluded by several factors. It also isn’t the case that base-load technologies are merely “evolving at a different pace from solar PV” as the Energy Division states. Instead, base-load technologies are mature technologies that have existed for multiple decades. It should therefore not be surprising that they are not offering or experiencing the same cost drop as PV panels. Moreover, these mature base-load technologies are extremely sensitive to the positive economies of scale that is very dissimilar to Variable Energy Resources (VERs) such as solar PV. Size is one of the factors limiting base-load resource participation. The data shows that the larger size projects dominate the auction offers not only because of the economies of scale but also because the base-load technologies are more sensitive to operations labor and capital equipment. For example, a 10 MW solar PV project differs most from a 20 MW solar project by the cost of the additional 10 MW of panels. A 10 MW base-load power plant is differentiated from a 20 MW base-load facility in insignificant ways. Both need a similar labor force, a turbine, a condenser, a generator, etc. Scaling up in MW is the most sensitive variable in a base-load project’s return on

investment. A larger project returns a higher return on investment, and vice-versa, requires a lower power price. Another factor accounting for low base-load resource participation in the RAM is location. Geothermal projects must be located in proximity to the geothermal resource, which are found in very specific areas in the western U.S. Yet the RAM limits project locations to the IOU service areas. Ormat's conclusion is that limiting size to 20 MW and limiting location eligibility leads to the result shown in the Energy Division's Figure 2, which is very low participation by base-load resources. It is not that we do not want to participate; rather, the program design is biased against base-load technology. Extension of the RAM program presents an opportunity to implement changes that will encourage base-load participation rather than simply continuing to dismiss it.

- ii) Yes, base-load technologies provide important attributes for grid stability including inertia, voltage control, capacity and, in geothermal's case, flexibility. This list does not include additional integration cost of VERs that the current IOU procurement process is not allowed to value.
- iii) We believe smaller distributed generation projects still have higher likelihood of success than larger ones and that the RAM program has proven to be a more effective way to allow such projects to obtain a PPA, compared to the regular RPS solicitation. Specifically, the current Least-Cost Best-Fit methodology used to valuate bids in the RPS solicitation represents a market failure by failing to distinguish between technologies that incur integration costs – like solar PV and wind – and those who do not – like geothermal. The RAM program does at least a little to correct this failure by allocating separate procurement targets for base-load vs. intermittent peaking and vs. intermittent non-peaking. Looking at the last few years, it seems the only geothermal PPAs signed in California with IOUs have been through the RAM program<sup>1</sup>. Geothermal projects not eligible for RAM due to size and/or location (as discussed above) have only been successful

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<sup>1</sup> Reference to Ormat's Mammoth G3 contracted with PG&E through RAM 1 and Mammoth G1 contracted with PG&E through RAM 2

in securing PPAs with non-CPUC-jurisdictional POUs<sup>2</sup>, in part since unlike the IOUs, the POUs are not prohibited from recognizing that geothermal resources do not impose the integration costs that VERs pose. The POUs thus are able to reflect the full value of geothermal resources.

- b) The Commission should increase the base-load MW target in future RAM solicitation, in order to promote the contracting of these premium resources that do not trigger integration costs, like the need for costly storage facilities or for fast-ramping back-up generation. Base-load technologies also provide important attributes for grid stability including inertia, voltage control, capacity and, in the case of geothermal resources, operational flexibility.

## 2) **RAM PROGRAM ELEMENTS**

### A)

- i) The RAM program would benefit the most by selecting option (3) with regards to location of resources: “Expanded to the transmission network within the Western Electricity Coordination Council service area.” This expanded definition is in line with the order brought to the RPS resource selection process by the implementation of Portfolio Content Categories specified in SB 2 (1X). While some geothermal resources are located within the service territory of the three IOUs, the majority of geothermal potential is located elsewhere in California – primarily in the Imperial Valley – as well as in neighboring states, primarily Nevada and Oregon. Applying the expanded definition to all three IOUs’ RAM programs would make more generation available to help meet California’s renewable goals, and assure California ratepayers improved access to competitively priced renewable energy that might otherwise be foreclosed from participating and would remove the current barriers to geothermal participation in the RAM. In addition, we note that the CPUC developed a “use case bucket” for transmission connected projects in the recent storage decision and ordered a

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<sup>2</sup> Reference to Ormat’s Wild Rose and Heber 1 projects, both securing PPAs with the Southern California Public Power Authority (SCPPA) after failing to secure similar PPAs with California IOUs through the RPS solicitation. <sup>3</sup> Reference to CPUC Decision 13-10-040 October 17, 2013

procurement target for storage projects that interconnect at the transmission level because of their value for system reliability.<sup>3</sup> Most of the grid stability benefits provided by base-load projects will be reaped at the transmission level and/or at the WECC level.

- ii) Assuming the expanded location definition is adopted, a ranking criterion should be added to separate between the three different Portfolio Content Categories. Alternatively, in order not to overly complicate the procurement process, the Commission may decide to make only projects that qualify as PCC1 eligible to participate in the RAM program.
- b) While some geothermal resources fall under the current 20 MW limit, many projects under development are in the 20-30 MW range. We therefore recommend increasing the maximum allowable project size to 30 MW, based on net generation, i.e. gross generation minus station service.
- c) No comment
- d) As mentioned above, we strongly support keeping the separation between base-load and the other type of technologies, since base-load resources are unfairly disadvantaged in the RPS solicitation. Furthermore, the MW allocation for base-load per each IOU should be increased compared to the current modest RAM program targets due to (a) the loss of SONGS – a major base-load resource, and (b) the high penetration of intermittent resources in California calling for contracting more resources that do not trigger integration costs and can help mitigate challenges brought by intermittent resources, e.g. by the ability to quickly ramp up or down.
- e) Yes, flexibility attributes and integration costs should be taken into account in ranking RAM project values.

### **3) RAM ELIGIBILITY AND VIABILITY**

- a)
  - i) Yes, subdivided projects should be eligible to participate, just like they are allowed to do so in the RPS solicitation. In geothermal development, for example, modular development and expansion is common practice aimed at ensuring the geothermal power plant closely matches the potential of the

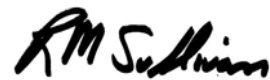
geothermal resource. Therefore, allowing the first phase of a project to bid into a RAM solicitation and then letting the developer bid the next phase of the same project into a subsequent RAM solicitation reflects a prudent development and procurement practice.

b) We think the current set of project viability requirements is, indeed, adequate.

#### **4) RAM CONTRACT TERMS AND CONDITIONS**

Ormat makes no suggestions to change the contract terms and conditions; the program parameters described above comprise the key program changes we recommend.

Respectfully,



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Dated: January 30, 2014

Dated: January 30, 2014

### VERIFICATION

I, Bob Sullivan, am the Vice President of Business Development for Ormat Technologies, Inc. I am authorized to make this Verification on its behalf. I declare under penalty of perjury that the statements in the foregoing copy of **COMMENTS OF ORMAT TECHNOLOGIES INC. IN PROPOSED DECISION CONDITIONALLY ACCEPTING 2013 RENEWABLES PORTFOLIO STANDARD PROCUREMENT PLANS AND INTEGRATED RESOURCE PLAN AND ON-YEAR SUPPLEMENT** dated November 4, 2013 are true of my own knowledge, except as to the matters which are therein stated on information and belief, and as to those matters I believe them to be true.

I declare under penalty of perjury that the foregoing is true and correct.

Executed on January 30, 2014 at Reno, Nevada.

A handwritten signature in black ink, appearing to read "B M Sullivan".

Bob Sullivan  
Vice President of Business Development, Ormat Technologies, Inc.